

Claims

1. An image coding method comprising generating an ordered sequence of coded image data, the sequence beginning with coded data representative of an area of the image having high importance, and ending with coded data representative of an area of the image having lower importance, wherein the image is one of a sequence of images, the image is compared to a reference image determined using preceding images of the sequence and the coding method is used to code differences between the image and the reference image in a coding loop, wherein when an image is coded to a lower resolution than an immediately preceding image, on adding the image to the reference image, artefacts at high resolution in the reference image are removed by setting the higher resolution data to zero so that the resolution of the reference image corresponds to the resolution of the image that was coded, thereby allowing the amount of data which is used to represent the coded images to be increased or decreased, to adjust the amount of coded data to match an available bandwidth.
2. An image coding method according to claim 1, wherein the importance of the image areas represented by the coded data decreases gradually over the ordered sequence.
3. An image coding method according to claim 2, wherein the image data coding sequence is arranged in a substantially spiral configuration centred on the area of importance.
4. An image coding method according to any preceding claim, wherein the area of importance is at a location selected as the most likely centre point of foveated vision of a viewer of the image.
5. An image coding method according to claim 4, wherein the area of importance is at a centre point of the image.
6. An image coding method according to any preceding claim, wherein the method includes converting an image into a multi-resolution representation, different resolution representations of the image being coded in sequence, the order of the sequence being determined to reflect psychophysical aspects of human vision.
7. An image coding method according to claim 6, wherein according to the sequence a luminance representation of the image is coded before chrominance representations of the image.

8. An image coding method according to claim 7, wherein for a given level of resolution, the luminance representation is arranged to include more resolution than the chrominance representations.
9. An image coding method according to any of claims 6 to 8, wherein the multi-resolution representation is generated using a wavelet transform, and the coding sequence comprises wavelet representation of the image which increase from a low level of resolution to a high level of resolution.
10. An image coding method according to claim 9, wherein wavelet orientations of horizontal and vertical image components are coded before wavelet orientations of diagonal image components.
11. An image coding method according to claim 10, wherein wavelet orientations of diagonal image components of a given level of resolution are coded after wavelet orientations of horizontal and vertical image components of a higher resolution.
12. An image coding method according to any preceding claim, wherein the method is implemented as part of a communications system, and the amount of coded information output by the method for a given image is determined on an image by image basis in accordance with the available bandwidth of the communications system.
13. An image coding method according to claim 12, wherein where necessary in order to fully utilise the available bandwidth of the communications system includes a truncated sequence of coded image data, image data representative of areas of least importance having been excluded from the truncated sequence.
14. An image coding method according to any preceding claim, wherein a predetermined code is added to a sequence to indicate the end of image data representative of a particular aspect of the image.
15. An image coding method according to any preceding claim, wherein scalar quantisation is used to minimise the amount of image data to be coded, the scalar quantisation being based upon a psychophysical model.

16. An image coding method according to any preceding claim, wherein the method includes an estimation of motion within an image as compared with a reference image, and the estimated motion is included in the coded image data.
17. An image coding method according to claim 16, wherein the method includes a choice between image data that has been coded using motion estimation and data that has been coded without using motion estimation, the choice being made upon the basis of minimising distortion of the coded image.
18. An image coding method according to any preceding claim, wherein the method includes vector quantisation of the image, the vector quantisation being implemented using a self organising neural map to provide image data in the form of indices of a codebook.
19. An image coding method according to claim 18 as dependent upon 9, wherein a threshold is applied to the magnitude of wavelet coefficients, and those which fall below the threshold are converted to zero coefficients.
20. An image coding method according to claim 18 as dependent upon 9, wherein different codebooks are used for different sub-bands of the wavelet representation of the image.
21. An image coding method according to any of claims 18 to 21, wherein the indices of the codebook are subsequently coded using variable length entropy coding.
22. An image coding method according to claim 21, wherein a series of zero indices followed by a non-zero index is coded as a pair of values by the variable length entropy coding, a first value representing the number of zero indices in the series and the second value representing the value of the non-zero index.
23. An image coding method according to claim 21 or claim 22, wherein a threshold is applied to the indices of the codebook, and those indices which fall below the threshold are converted to zero indices.
24. An image coding method according to claim 23, wherein wavelet coefficients which fall above the threshold are reduced by the value of the threshold.
25. An image coding and decoding method comprising: